

# TARGETED WEATHER INFORMATION DELIVERY SYSTEMS AND METHODS

## FIELD OF THE INVENTION

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The present invention relates to systems and methods for delivering targeted weather information over the infrastructure such as the Internet and, more particularly, to systems and methods for delivering information such as content, advertising, recommendations, format, or commands targeted based on the individual, geographic location, interests, and/or weather.

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## BACKGROUND

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Virtually everyone is affected at least to some degree by weather conditions. Because of the influence of weather on virtually every form of human activity, people have a strong interest in being informed about the weather, even if their interests on the subject vary. For example, people can be classified as weather engaged, a weather planner, or those that view weather as a commodity. The weather engaged are generally interested in understanding the causes of severe weather and are mainly motivated by emotional needs. Weather planners, on the other hand, are motivated by functional activities, such as work, travel, or hobbies. Those people that view weather as a commodity are interested in the basic forecast but generally do not seek out any additional information on the weather.

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People can obtain their desired weather information from a variety of sources, currently including from a newspaper, over the radio, on television, from a personal digital assistant (PDA), a wireless device, or computer. Other sources will no doubt be adopted in the future. The Internet has greatly facilitated the ability to deliver up-to-date weather information to virtually any locale within the world. Weather-related web sites, such as The

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Weather Channel's weather.com web site, operate generally under a published model as opposed to a transactional model. Under the published model, weather data is gathered and predetermined web pages are generated and published to the viewing public. For instance, for The Weather Channel, The Weather Channel will generate pages for the three day and five day forecasts for each city and store these pages for viewing upon request. The transactional model, in contrast, is typified by a financial system operated by Schwab in which visitors can view account balances, transfer balances, purchase stocks, and perform other transactions.

Weather information has some unique attributes that influence how it is delivered to the consumer. For one, weather information is highly geographically dependent. The weather in one state, or even one city, is often irrelevant to those who live in another city or state. Moreover, weather patterns are even more localized than on a city level, whereby the weather may differ depending upon what part of the city or zip code one lives. In addition to geography, weather information is also highly time sensitive. Yesterday's weather is frequently of no use to one concerned about today's weather. Any delivery of weather information must therefore ensure that the weather information is delivered for the proper locale and that the weather information has not become stale.

The need to present up-to-the-minute weather information for each locale places a tremendous burden on the delivery of weather information over the Internet. Presently, The Weather Channel at weather.com delivers weather information targeted to over 70,000 unique locations or geographic areas. For each of these areas, The Weather Channel provides a location page, such as a city page, as well as additional pages, such as the seven-day forecast, local Doppler radar, regional Doppler radar, and regional satellite.

Weather.com takes the weather data and pregenerates all of these pages and delivers them upon request. The need to generate all of these pages in advance for each of the locations results in The Weather Channel pregenerating over one million pages to reflect current weather conditions in all locations. The weather conditions, as mentioned above, have a relatively short shelf-life, whereby The Weather Channel must periodically update the pregenerated pages with pages that reflect the most current weather conditions.

Consequently, within one hour, The Weather Channel pregenerates files that result in fourteen million variations of pages. In addition to this demand in generating all of these web pages in advance, the weather.com site also must be able to handle a large volume of traffic requesting various ones of these pages.

In addition to the demand caused by the large number of pages and high volume of traffic, the weather.com site as well as many other sites are now struggling to deliver information to a plurality of different types of products. As mentioned above, the weather.com site pregenerates millions of pages every hour so that these pages may be delivered over the Internet and viewed at a personal computer. While the personal computer remains the predominant product for accessing the Internet, a number of other devices or products are available now and more are being introduced into the market that allow Internet access. For instance, personal digital assistants (PDAs), lap-top computers, and mobile radiotelephones are all able to provide wireless access to the Internet. Additionally, Internet access is also being made available through television, such as WebTV, enhanced TV, or digital TV. Unfortunately, the need to deliver content to different types of products, places an even greater demand on the Internet site. The formatting and content that is available to a personal computer may be not optimal for a PDA or a mobile radiotelephone. Consequently,

the Internet site may have one platform for delivering to Internet access to a personal computer, a second platform for a PDA, a third platform for mobile radiotelephones, and a fourth platform for TV. The demand on the system becomes aggravated when even more types of products are introduced into the market.

5 As mentioned above, consumers of weather information can be generally categorized as a weather planner, a weather enthusiast, or one that views weather as a commodity. Not surprisingly, each of these three types of weather consumers will visit a site having weather information for different reasons. For instance, the weather enthusiast may be interested in learning about the latest meteorological event such as a hurricane, the weather planner may be interested in the weekend weather for a planned sporting event and the forecast for weather during the week for cities where the person will be traveling, and the people viewing weather as a commodity may only be interested in the forecast for the day. Under the publishing model, even though the visitors may have disparate interests, the weather site makes no distinctions between the three types of visitors. A need therefore exists for weather  
15 Internet sites to deliver more personalized information to its visitors.

### SUMMARY

The invention addresses the problems above by providing systems and methods for delivering targeted information. The systems and methods receive data feeds that contain  
20 weather information and deliver the weather information to a plurality of different types of products, such as mobile radiotelephones, lap-top computers, TV products, personal digital assistants (PDAs), and personal computers. The systems and methods preferably transmit this information through the Internet but may transmit the information through other types of

networks, such as cellular networks, wireless data networks, cable networks, etc. The weather systems can deliver weather information targeted to the consumer, whereby consumers are able to receive weather information that is of most interest to them. The weather systems are also able to deliver information that is targeted to the location so that consumers receive information tied to their particular geographic region of interest.

Furthermore, the weather systems can deliver information targeted to the weather. For instance, the weather systems select information to be delivered based upon the current conditions, whereby the information that is delivered when it is snowing differs from that which is delivered when it is raining or when conditions are clear and sunny. The weather systems are also able to target information based on the product. As a result, the weather systems can accommodate the differences in the products' display areas, display capabilities, audio/video capabilities, processing power, as well as limitations on the network delivering the information to the product. The weather systems are also able to selectively deliver information based on a co-brand relationship or some other partnership. The weather systems are flexible to allow various types of co-brand relationships which may dictate what information is selected as well as how the information is delivered ultimately to the consumer.

The weather systems can deliver any type of weather information to consumers. In addition to weather information, the weather systems also deliver other types of information or data to the consumers. As one example, the weather systems deliver advertising which can be targeted to the consumer, location, weather, product, and co-brand relationship. In addition to advertisements and weather information, the weather systems also deliver recommendations or advice to consumers. The recommendations may be delivered upon

request by the consumers or may be automatically forwarded to the consumers. For instance, upon the approach of a storm front, the weather systems may recommend to a consumer that the person bring appropriate rain gear or an umbrella before leaving home. In addition to weather information, advertising, or recommendations, the weather systems may also

5 transmit commands to control the consumers' devices or systems. For instance, upon the approach of a cold front, the weather systems may send commands to make appropriate adjustments to thermostats to ensure that the consumers' homes are appropriately heated.

The weather systems and methods work well with partners, such as in a co-brand relationship. In delivering weather information over the Internet, the co-brand relationship may exist in a number of ways. As one way, the co-brand relationship may be detected through the domain name. The partner's name, for instance, may form part of the domain name. As another example, the weather systems may deliver information directly to the partner who then delivers the weather information and other information to the consumers. As a third example, the weather systems may detect a co-brand relationship through the use

15 of cookies. As yet another example, the co-brand relationship may be established with click-through links to each other's sites. Those skilled in the art will appreciate that other ways exist and will be developed in defining a partnership and are encompassed by the invention.

The weather systems and methods preferably allow consumers to customize the weather information that they receive. This customization allows the consumers to select the

20 type of weather information that they desire and may also specify how the information should be presented and where the information should be delivered. One way in which consumers can customize the information they receive is through the use of templates. The

consumers complete these templates on-line and the weather systems refer to these templates when fulfilling a consumer's request for weather information.

According to one embodiment, the weather systems receive data from a plurality of data feeds, parse the data and tag it with attributes, and then store the data in a database. The parsing preferably occurs in Extensible Mark-Up Language (XML) to take advantage of the benefits that XML offers. The weather systems include a rules engine for selectively retrieving information from the database, whereby information may be targeted according to the person, location, weather, product, and partner relationship. Furthermore, the information may be selected based upon customization defined by the consumer. After the information is retrieved from the database, an integration engine assembles the information and delivers it to the consumer. The integration engine may comprise a plurality of integration engines, with each engine associated with a particular type of product or network.

### BRIEF DESCRIPTION OF DRAWINGS

The accompanying drawings, which are incorporated in and form a part of the specification, illustrate preferred embodiments of the present invention and, together with the description, disclose the principles of the invention. In the drawings:

Figure 1 is a block diagram of a weather targeting system according to a preferred embodiment of the invention and its interconnection to data feeds and to a plurality of different products through one or more networks;

Figure 2 is a block diagram of the weather targeting system of Figure 1;

Figure 3 is a flow chart of a method for delivering personalized targeted information;

Figure 4 is one embodiment of the weather targeting system for executing the method of Figure 3;

Figure 5(A) is a second embodiment of the weather targeting system for executing the method of Figure 3 and Figures 5(B) and 5(C) are exemplary screen shots showing personalization;

Figure 6 is a flow chart of a method for delivering geographically targeted information;

Figure 7 is a flow chart of a method for delivering weather targeted information;

Figure 8 is a flow chart of a method for delivering product targeted information;

Figure 9 is a flow chart of a method for delivering information targeted based on a co-brand relationship;

Figure 10 is an example of a screen shot of the delivery of weather information according to a first type of co-brand relationship;

Figures 11(A) and 11(B) are examples of screen shots of the delivery of weather information according to a second type of co-brand relationship;

Figure 12 is a flow chart of a method by which information is assembled and presented for a consumer;

Figure 13 is a flow chart of a method for targeting information based on the person, location, weather, product and/or co-brand relationship;

Figure 14 is an exemplary graph illustrating fluctuations in traffic or demand for weather information over a period of time;

Figure 15 is a block diagram of a weather system having an advertising engine for controlling the delivery of targeted advertising;



Figure 16 is a block diagram of a weather system having a recommendations engine for providing advice or recommendations to consumers;

Figures 17(A), 17(B), and 17(C) are exemplary screen shots illustrating a customization ability offered by the weather targeting system;

5 Figure 18 is a flow chart depicting a method of customizing the delivery of information; and

Figure 19 is a block diagram of a weather targeting system according to a second embodiment of the invention in which data is parsed, tagged, and stored in a database.

## DETAILED DESCRIPTION

### I. OVERVIEW

With preferred embodiments of the invention, systems for delivering weather information over the Internet can selectively deliver information that is associated with one or more tags or triggers. One of the triggers is the consumer whereby the system may deliver information targeted to that particular person. Another trigger or tag is the location, whereby the information delivered from the weather system can be targeted for a particular locale. In addition to the person or location, the weather system may also deliver information that is targeted to a particular group, such as those having a common interest. Another tag is the weather itself, whereby the information that is delivered can be targeted to current conditions or other weather related information. Additionally, because of the existence of many different types of products that can receive Internet content, the weather systems according to the invention preferably also target the information according to the medium. For instance, information that is delivered to a personal digital assistant (PDA) is different than that

delivered to a personal computer. As another option, the weather systems according to the invention target the delivery of information based on the involvement of a partner or other third parties. As an example, weather information that is delivered through America On Line (AOL) will be presented differently than the weather information delivered directly from the weather systems to the consumers. Other examples of tagged information or triggers that may be used by systems or methods according to the invention will become apparent to those skilled in the art and are encompassed by the invention.

The systems and methods according to the invention rely upon the tags in order to selectively deliver information. The information that is delivered may depend upon the status of one or more of the tags or triggers. For instance, the content of weather information that is delivered may depend upon the consumer, the person's interests, location, medium, age, gender, and involvement of any third party. Targeted information also includes advertising, whereby the advertising may be selectively delivered in response to the consumer, location, interests, weather, medium, or a co-brand relationship. According to one aspect, the invention also includes the capability of delivering recommendations. For example, the systems may issue recommendations based on a person's interests and the current or predicted weather in that person's locale. The weather systems and methods of the invention also rely upon the tags in determining the proper format or presentation of the information. As a result, the information delivered to a PDA can be optimized and will likely be quite different from the information delivered to a PC. As a further example, the targeted information may also include commands. For example, based on the current or predicted weather for a person's location, the weather systems and methods of the invention issue commands that control the person's devices or systems. For instance, upon the

approach of a cold front, the weather systems generate commands that are transmitted to the person's house in order to appropriately adjust the thermostat.

A weather targeting system 10 according to a preferred embodiment of the system is illustrated in Figure 1. The weather targeting system 10 receives information from one or more data feeds 8. These data feeds 8 may be derived from governmental sources, commercial suppliers, private citizens or groups, mobile or stationery sources, or terrestrial, air-borne, space-situated, or marine-based sources. Some examples of data feeds 8 for weather information include National Weather Service, the National Center for Environmental Predictions, The Weather Channel, NOAA, Fleet Weather, Weather Labs, Inc., Accu Weather, Weather Concepts, or any third party value added supplier. As will be better appreciated from the description below, data feeds 8 also include non-weather information. This information may relate to traffic, airport delays, sporting events, advertisements, recommendations, commands, etc.

The weather targeting system 10 communicates with a plurality of devices through one or more networks 12. For instance, as shown in Figure 1, the weather targeting system 10 communicates with mobile radiotelephones 13, lap-top computers 14, with digital TV, WebTV, and other TV products 15, PDAs 16, and desk-top computers 17. The weather targeting system 10 advantageously is not limited to these types of products 13 through 17 but is able to accommodate new products as well as new brands, models, standards or variations of existing products. As will be described in more detail below, the weather targeting system 10 can optimize the presentation and selection of information according to the network 12 as well as the product.

The network 12 will, of course vary, with the product receiving the information from

the weather targeting system 10. For mobile radiotelephones 13, the network may comprise AMPS, PCS, GSM, NAMPS, USDC, CDPD, IS-95, GSC, Pocsag, FLEX, DCS-1900, PACS, MIRS, e-TACS, NMT, C-450, ERMES, CD2, DECT, DCS-1800, JTACS, PDC, NTT, NTACS, NEC, PHS, or satellite systems. For a lap-top computer 14, the network 12 may comprise a cellular digital packet data (CDPD) network, any other packet digital or analog network, circuit-switched digital or analog data networks, wireless ATM or frame relay networks, EDGE, CDMAONE, or generalized packet radio service (GPRS) network. For a TV 15 product, the network 12 may include the Internet, coaxial cable networks, hybrid fiber coaxial cable systems, fiber distribution networks, satellite systems, terrestrial over-the-air broadcasting networks, wireless networks, or infrared networks. The same type of networks 12 that deliver information to mobile radiotelephones 13 and to lap-top computers 14 as well as to other wireless devices, may also deliver information to the PDAs 16. Similarly, the same types of networks 12 that deliver information to TV products 15 may also deliver information to desk-top computers 17. It should be understood that the types of networks 12 mentioned above with respect to the products 13 to 17 are just examples and that other existing as well as future-developed networks may be employed and are encompassed by the invention.

An example of a back-end system 30 for use in the weather targeting system 10 will now be described with reference to Figure 2. For this explanation, the product will be a desk-top computer 17 and the network 12 will comprise the Internet 12. The operation of the back-end system 30 as well as the weather targeting system 10 for other products or networks should be apparent to those skilled in the art from this example. The back-end system 30 includes a directory name server (DNS) 32 for receiving requests for information

through the Internet 12. The DNS 32 balances these requests between load-balancing devices 34A and 34B. Each of the load-balancers 34 fulfills requests for web pages by gathering the appropriate information and sending it to the DNS 32, which then sends it through the Internet 12 to the requester, such as to the desk-top computer 17. The load-balancers 34 pull information from content servers 36, image servers 37, Common Gateway Interface (CGI) servers 39, or fast CGI (fCGI) servers 38. The information from data feeds 8 is routed through the DNS 32 to the sprinklers 34, which then are involved in the updating of the servers 36 through 39. The sprinklers 34 find the least recently busy server for a request and hence load balance across multiple servers. The sprinklers 34 are preferably Sun servers.

## II. TARGETING

### A. TAGS/TRIGGERS

#### 1. PERSON

As mentioned above the weather targeting system 10 selectively delivers information in response to one or more tags or triggers. One of the triggers is the person requesting the information, also commonly referred to as the consumer of the information. With reference to Figure 3, a method for targeting information based on the person begins at 42 with a request for information. At 44, the requester is identified, at 46 the information targeted for the requester is retrieved, and then this information is delivered to the requester at 48. The requester can be identified in a number of ways. As a first example, the identity and other information on a requester can be obtained through a registration, log-in, or questionnaire procedure whereby the requester provides the data to the system 10. Thus, after the person logs-in to the system 10, the system 10 knows the identity of the person and can deliver the

targeted information at 48 according to information known about that person. The questionnaire is one way in which users can provide information about themselves such as their interests and allows the system 10 to select appropriate content, advertising, or other information that is targeted to the person. The information can be obtained from consumers in any suitable manner, such as through third parties who receive the information and forward it to the weather system 10.

In addition to the consumer or requester providing personal information to the system 10, the system 10 can derive this personal information intrinsically. Figure 4 illustrates one example of how the weather targeting system 10 may obtain consumer information intrinsically. The weather targeting system 10 includes a web server 50 for receiving requests from visitors to the site, such as consumer having computer 17. Upon receipt of a request, the web server 50 sends a query to the rules engine 52 with this query identifying the consumer. The rules engine 52 in turn performs a look-up in a data mart 54 for a key associated with that particular consumer. The keys stored in data mart 54 represent profiles of consumers and the consumers' particular interests. For instance, the profile key identifies the number of visits the consumer has made to the system 10, the local forecast most frequently requested, the type of weather information most frequently requested, and interests of the consumer. These interests include, but are not limited to, whether the consumer has an interest in golf, skiing, fishing, surfing, gardening, sailing, flying, etc. The data mart 54 returns the profile to the rules engine 52 which then fulfills the consumer's request by selecting information based at least in part by the profile key. As shown in the figure, the rules engine 52 retrieves the information targeted for that particular consumer from the back-end weather system 30, delivers it to the web server 50 which then routes it

through the Internet 12 to the computer 17.

In the preferred embodiment, a profile agent is placed on each of the servers 36 to 39 to monitor the activity of visitors through the system 10. A non-limiting example of a suitable profile agent is provided by AndroMedia of San Francisco, California under the name LikeMinds. On a periodic basis, the data gathered by the profile agents is analyzed and profile keys are generated for each consumer who received information from the system 10. These profile keys are stored in the data mart 54 and are available to the rules engine 52. An example of a format for the profile key is BUTRUSOK021, in which "BUTR" means the person is a business traveler, "US" means the individual lives in the United States, "OK" designates the state of Oklahoma, and "021" refers to Tulsa. The key is placed in a spoofed URL that is transmitted to the profile agent as well as the rules engine 52, such as a controller servlet, which ultimately defines the appropriate modules that are placed on a page.

Rather than using a profile key, the weather targeting system 10 may determine the profile in real-time. With reference to Figure 5(A), the request from a consumer having computer 17 is sent through the Internet 12 to the web server 50 which then delivers this request to a profiler 56. The profiler 56 determines the appropriate information for the consumer and retrieves this information from the back-end weather system 30. The profiler 56 employs algorithms that access a database 58 which stores historical information on consumers as well as current information on the consumers, such as their clickstreams in order to generate the profile in real-time.

The profiler 56 is not limited to any particular algorithm in determining the appropriate information. According to one aspect, the algorithm first makes no assumption

regarding the consumer and delivers a generic homepage. After a customer goes to a zip/city search and enters a city name or zip code, the profiler 56 now knows a geographic preference for the consumer and has a temporal reference. The profiler 56 presents a secondary set of links based on location and associated weather for a given time frame. By clicking on the secondary link, the profiler 56 now knows a third element by which to provide relationalized content focused at a demographic user group. For instance, if the consumer does a zip code search for Denver, it's snowing, and the consumer clicks on skiing, the profiler 56 presents related ski content and advertising. If a new activity is clicked, the profile changes with the user cookie remaining the same.

It should be understood that the invention is not limited to only one of the above-identified approaches to providing information targeted to the consumer. Instead, the weather targeting system 10 may employ a combination of those techniques as well as other techniques. For instance, the weather targeting system 10 may solicit information from all of its consumers but only a certain group of them will actually register or complete the questionnaire. Thus, for the group that did register or complete the questionnaire, the weather targeting system 10 knows about the consumer's interests with a high level of confidence. For the other consumers to the site that do not register or complete the questionnaire, the weather targeting system 10 relies upon the profile key or the profiler 56. Even for those that do complete a questionnaire or register, the weather targeting system 10 preferably also generates the profile key or employs the profiler 56 and looks at both the registration information as well as the profile key or other data to select information that will be delivered to the visitor.

Figures 5(B) and 5(C) are screen shots that show examples of personalization. Figure



5(B) is a screen shot that is presented to a first visitor upon entering a given URL associated with the system 10, such as weather.com. As shown in Figure 5(B), the first visitor receives weather information and also receives a first set of content. Before delivering the first set of content to the first visitor, the system 10 determines the identity, or at least the profile, for the first visitor and determines that the first visitor is considered to have an interest in golf. Accordingly, the system 10 provides a golf advertisement as part of this first set of content.

A screen shot that is presented to a second visitor upon entering the same URL associated with the system 10, such as weather.com, is shown in Figure 5(C). As shown in Figure 5(C), the second visitor also receives a common set of information as the first visitor, such as a common set of weather information. The second visitor, in contrast, receives a second set of content which differs from the first set of content. Whereas the first visitor was determined to have an interest in golf, the system 10 determines that the second visitor has an interest in travel and accordingly delivers an advertisement for a car insurance company in the second set of content.

## 2. LOCATION

As discussed above, the weather targeting system 10 can deliver information that has been targeted to the consumer, such as the requester's interests. In addition to personalized targeted information, the weather targeting system 10 may also deliver geographically targeted information. With reference to Figure 6, a method 60 by which the weather targeting system 10 delivers such information begins at 62 with receiving a request for information from a requester. At 64, the weather targeting system 10 identifies the location of the requester and at 66 retrieves the information that has been geographically targeted. At

68, the weather targeting system 10 delivers the geographically targeted information to the requester. The information can be targeted to the geographic location of the consumer, to the geographic location associated with the information desired by the consumer, or be associated with a geographic region in other ways.

5           The geographic location can be determined in any suitable manner. As one example, the requester may provide this information to the weather targeting system 10 through a registration process, by completing a questionnaire, or indirectly through profiling. As another example, the requester may input this information to the weather targeting system 10 by entering the geographic location, such as the city, zip code, area code, or exchange of interest. The weather targeting system 10 may also determine the geographic location of the requester through an identification of the requester's product and/or through the assistance of the network 12. If the product is a mobile radiotelephone 13, the location of the requester can be determined by a tower receiving signals from the mobile radiotelephone 13.

Reference is made to co-pending provisional patent application Serial Number 60/178,186,  
15           which is incorporated herein by reference, for additional details on detecting the geographic location of requester. As another example, if the requester is using a computer 17, the weather targeting system 10 may detect the geographic location of the requester through the IP address. For a set-top box or other TV product 15, the weather targeting system 10 may determine the geographic location of the requester through an address associated with the  
20           set-top box. Further, the consumer's product itself may detect the geographic location and deliver this to the weather targeting system 10. Other ways of detecting the geographic location and delivering the information to the weather targeting system 10 will become apparent to those skilled in the art and are encompassed by the invention.

Advertising is one type of information that may be geographically targeted. As an example, in determining which advertisement should be delivered along with a five-day forecast, the weather targeting system 10 may consider the country, state, marketing area, city, and zip code of the requester. The marketing area may encompass more than one city and also may cross state borders. The direct marketing area for Washington, D.C. would therefore likely include portions of Virginia as well as Maryland. The selection of a particular advertisement may be influenced by one or more of these geographic descriptors.

Advertisements that are tagged to a smaller geographic area, such as to a city or zip code, are more precisely targeted and thus more valuable to the advertisers than an advertisement that is tagged to a higher geographic region, such as the city or state. As will be described in more detail below, the selection of advertisements are preferably influenced by factors beyond the geographic location.

### 3. WEATHER

In addition to delivering geographically targeted information, the weather targeting system 10 also preferably delivers weather targeted information. With reference to Figure 7, a method 70 for delivering weather targeted information begins at 71 with the weather targeting system 10 receiving a request for information. At 73, the weather targeting system 10 identifies the location of the consumer and then, at 75, determines the weather for that location. As discussed above, the location of the consumer can be determined in any suitable manner. After the location of the consumer as well as the weather for that location have been determined, the weather targeting system 10 retrieves the weather targeted information at 77 and delivers this information to the consumer at 79.

One example of information that is weather targeted is the banner that is displayed along with a local city forecast. When a request comes in for a the local forecast for a city, the weather targeting system 10 selects a banner based on the current conditions for that city. Thus, if Denver is experiencing light flurries, the banner shown for the Denver city page has a picture of a region experiencing light flurries. Similarly, the banner that is shown for the Seattle city page shows a landscape with rainy conditions when it is raining in Seattle and when Atlanta has clear and sunny skies the banner shown with the Atlanta city page shows a picture of a landscape with sunny conditions.

Through the method 70 of delivering weather targeted information, the weather targeting system 10 can deliver advertising that is targeted not only to a person and the geographic region within which that person resides, but moreover can deliver advertising that is targeted to the current weather conditions. Thus, using the examples provided above with the banners for the city pages, the weather targeting system 10 can deliver advertisements for skis to people in Denver who have expressed an interest or who may be interested in outdoor sports, may deliver an advertisement for a snow blower for people in Denver who are in an older age group, and perhaps an advertisement for snow chains for those who travel. For requesters who reside in Seattle, the weather targeting system 10 may deliver an advertisement for umbrellas or rain gear to one group and perhaps an advertisement for a movie to another group. In Atlanta, the weather targeting system 10 can deliver an advertisement for gardening supplies to those who have expressed an interest in gardening and deliver an advertisement for golf equipment or for a local golf course to those who may have an interest in golf.

In the preferred embodiment, the weather targeting system 10 encodes the weather

conditions for each of the local forecasts. For instance, light snow is associated with a code of "16," heavy rain has a code of "28," and clear and sunny skies has a code of "02." Each time that the weather targeting system 10 obtains new weather data from the data feeds 8 and updates the local forecast, the weather targeting system 10 also updates the codes associated with the current weather conditions for that city or for other geographic regions. As will be described in more detail below, the advertisements are then tagged to the weather conditions whereby the weather targeting system 10 is able to select the proper advertisement for the current weather conditions.

#### 4. PRODUCT

As discussed above with reference to Figure 1, the weather targeting system 10 transmits information to a plurality of different products, such as mobile radiotelephones 13, lap-top computers 14, TV products 15, PDAs 16, and desk-top computers 17. The products that receive information from the weather targeting system 10 have different requirements as to how the information should be delivered and presented. Since the mobile radiotelephone 13 has a relatively small viewing area and receives the information through a wireless network, the weather targeting system 10 should preferably not deliver graphic intensive information but instead should only deliver text. In contrast, for the TV products 15, the weather targeting system 10 should maximize such graphic intensive information in order to enhance the viewing experience.

A method 80 by which the weather targeting system 10 optimizes the content and presentation according to the product will now be described with reference to Figure 8. At 81, the weather targeting system 10 receives a request for information. Before retrieving the

requested information, the weather targeting system 10 identifies the type of product that will receive the information requested. The weather targeting system 10 can identify the type of product in any known or future developed way. For some requests, the weather targeting system 10 knows the type of product based on the network 12 that delivered the request.

5 Also, the weather targeting system 10 can detect the type of product based on the request itself. If the request was formatted in Hand-held device mark-up language (HDML), then the weather targeting system 10 can determine the request was issued by the mobile radiotelephone 13, PDA 16, or other such products. Other ways in which the weather targeting system 10 can determine the type of product is by querying the product, by having visitors register the products, by the URL a visitor goes to such as wireless.weather.com, or through indirect ways. One way is to extract product information based on contacted host name. For instance, if the extracted host name is "wireless.weather.com/sprint," then the system 10 determines that the request came from a wireless device and furthermore that the wireless device is supported by Sprint PCS. Other examples of host names includes  
15 wireless.weather.com/Pocketnet, wireless.weather.com/PalmVII, inbox.weather.com/Earthlink, inbox.weather.com/LifeMinders. Also, the system 10 can determine product information through use of the filename extension, such as .html, .wml, .pqa, .hdml, .vml, .rm, etc.

After the type of the product making the request is known, the weather targeting  
20 system 10 next obtains the requested information at 85, formulates the presentation or arrangement of the content at 87, and then delivers the information to the consumer at 89. A more detailed description on a preferred manner on how the weather targeting system 10 obtains the requested information, formulates the presentation or arrangement of the content,

and delivers the information will be discussed below in conjunction with Figure 12.

In general, at 85, the weather targeting system 10 obtains content that both fulfills the request and which is well-suited for the product. For instance, for a request for a five-day forecast, the weather targeting system 10 selects a small amount of text if the request came from a PDA 16 but selects a multi-colored more graphic intensive symbol representing the weather conditions and a more elaborate description of the weather conditions if the request came from one of the TV products 15. In addition to content, the weather targeting system 10 preferably also formulates the presentation or arrangement of the content based on the product issuing the request. The weather targeting system 10 formulates the presentation or arrangement based on the screen size, colors available with the display, audio and video capabilities of the product, as well as other factors.

## 5. CO-BRAND

For years, The Weather Channel has been known as providing the most accurate and dependable weather information. Many companies recognize that providing weather information is not their core competency and therefore partner with other companies for this aspect of their business. Because of the great reputation enjoyed by The Weather Channel, many companies seek to combine their goods or services with weather information from The Weather Channel.

On the Internet, one way in which companies at one site combine weather information available from another site is through co-branding. The co-branded relationship can be established in a number of ways, several of which will be described below in greater detail. Overall, with reference to Figure 9, a method 90 by which the weather targeting system 10

delivers information in a co-branded relationship begins at 91 with the weather targeting system 10 receiving a request for information. At 93, the weather targeting system 10 determines both the existence of a co-brand relationship as well as the type of relationship. At 95, the weather targeting system 10 then obtains the information according to the relationship and at 97 delivers the information for ultimate receipt by the consumer.

One way in which a co-brand relationship may be established is through the domain name. For instance, with the weather channel, visitors to The Weather Channel's site enter the domain name of www.weather.com. In a co-brand relationship, a consumer could be directed to the domain name partner.weather.com, where "partner" is the other entity involved in the co-brand relationship. When the weather targeting system 10 receives a request for information at www.partner.weather.com, the system 10 identifies the co-brand by examining the URL. The weather targeting system 10 maintains separate directories for each partner of a co-brand relationship. The weather targeting system 10 therefore at 95 looks in the directory for a particular partner when a request for information is received. In the preferred embodiment, the weather targeting system 10 employs the "include" command to insert the partner-specific information.

Figure 10 illustrates one example of weather information provided through a co-brand relationship. In this example, AOL is the partner and the weather channel provides AOL-specific information along the top, left, and bottom of the page through the includes. The remaining portion of the page, generally the center right part of the page, is information branded with The Weather Channel name and may be used with a number of other partners. The retrieval of the requested information at 95 may also involve selection of advertisements



or other information specific for that partner. Thus, with the example of Figure 10, weather.com would only deliver advertisements that have been approved by AOL.

As explained above, one approach to establishing a co-brand relationship is by identifying the partner in the domain name. As another example, instead of the request going first to the weather targeting system 10, the request for weather information may originate with the partner or some other site. When the partner receives the request for weather information, this partner then performs a re-direct through the CGI to obtain the weather information. As a result of the re-direct, a query is sent to the weather targeting system 10 for certain information which is returned to the partner's site and delivered to the consumer. For example, the partner can insert the information received from the weather targeting system 10 into a web page and deliver the page to the consumer.

A third way of establishing a co-brand relationship is with a click-through. A consumer may be at the partner's site and click on a link to obtain weather information. Upon doing so, the consumer is directed to the weather targeting system 10 which detects the co-brand at 93 based on the URL of the link. The weather targeting system 10 then obtains the requested information at 95 based on the relationship with that partner. With this click-through relationship, the weather targeting system 10 receives a request for information at a certain page, such as [www.weather.com/co-brand/partner/](http://www.weather.com/co-brand/partner/).

An example of a click-through co-brand relationship will now be described with reference to Figures 11(A) and 11(B). As shown in Figure 11(A), the weather targeting system 10 receives a request for information at [www.weather.com/co-brand/abcnews/](http://www.weather.com/co-brand/abcnews/). Based on the page requested, the weather targeting system 10 determines that a co-brand relationship exists and that the partner is ABC News. The weather targeting system 10, such

as weather.com, then looks in the ABC news directory for the appropriate include for that page. For instance, the ABC news weather section is included on the left-hand side of the page. The co-brand relationship, of course, can work both ways. If the consumer then clicks on a link under the abcnews.com weather section, the consumer can be presented with the page shown in Figure 11(B), in which the weather channel is shown along a right-hand side of the page.

Another way in which a co-brand relationship may be established is through the use of cookies. When the consumer goes to a site associated with the weather targeting system 10, the weather targeting system 10 detects that the consumer was at the partner's site and displays partner-appropriate information. For instance, the weather targeting system 10 has a script in the nav bar that looks for a cookie with a particular name, such as "referrer." If that cookie exists and the cookie has a certain value, such as "freeride," the system 10 displays the link back to the partner, which in this example would be FreeRide.com.

## 6. Assembling Pages

An example of a method 100 by which portions of pages are assembled for delivery to users will now be described with reference to Figure 12. This method 100 will be described with the example of a city page 102 for a location, such as a page that shows the current local weather condition and forecast for a city. The page 102 receives the current local weather conditions through an observations include 104 and also has a banner include 103. The banner include 103 may insert other content, such as an advertisement or a logo for the system 10, with the weather conditions for a location.

The actual contents of a page are defined through templates which are preferably

populated through scripts. The template for the city page 102 defines the position and presentation of the banner 103 and the position and presentation of the observations 104. When a location relationship changes, a script is run to create the location's base page, or template. The method 100 first begins at 106 with the script obtaining Location Ids from a location hash table 107. Next, at 108, the script obtains the city page template from CMS 109. At 110, the script overwrites the location page with an include for the closest observation using its location ID.

Each time observations are updated in a database, another script is run to automatically update the observations. This script begins at 112 by obtaining the observations information from hash table 113. Next, at 114, the script selects the condition code based on such factors as weather and time of day. As discussed above, other factors that may be considered include the individual requesting the weather information, the product being used by the individual, and the existence of any co-brand relationship. At 116, the script then overwrites the banner include for the location to display the condition code image and at 118 overwrites the observations include for the location to display the observations information.

While the method 100 has been described with reference to a page with includes, the invention includes other ways of selecting and/or inserting content. For example, if the product is a wireless phone 13 or PDA 16, rather than employing includes the invention may select an appropriate page or card for delivering to the individual. Other variations and modifications will be apparent to those skilled in the art.

## 7. MULTIPLE TRIGGER/TAGS

As discussed above, the weather targeting system 10 can target information according to the person, location, weather, product, or a partnership, such as a co-brand relationship. In the preferred embodiment, the weather targeting system 10 selects information based on more than one of the attributes, such as: person, location, weather, product, and co-brand relationship. For instance, with reference to Figure 13, a method 120 of delivering targeted information begins at 121 with the weather targeting system 10 receiving a request for information. At 123, the weather targeting system 10 determines whether the information is targeted to the person. If the information is targeted to the person, then at 125 the weather targeting system 10 selects the personalized targeted information. At 127, the weather targeting system 10 next determines whether the information is targeted to the location and, if so, at 129 then selects the location targeted information. At 131, the weather targeting system 10 determines whether the information is targeted to the weather and, if so, selects the weather targeted information at 133. Next, at 135, the weather targeting system 10 determines whether the information should be selected based on the product, and if so, selects the product targeted information at 137. At 139, the weather targeting system 10 determines whether the information is targeted based on the co-brand relationship or other type of partnering arrangement. If the information should be selected based on a co-brand relationship, then at 141 the weather targeting system 10 selects the co-brand targeted information. At 143, the weather targeting system 10 delivers the information to the consumer.

## B. DELIVERED INFORMATION

### 1. CONTENT

The information that is targeted by the weather targeting system 10 can be any type of information. Because the weather targeting system 10 delivers weather information, one type of information that may be targeted is weather information. Weather information includes, but is not limited to, current conditions, sea and surf conditions, ski conditions, pollen, air quality, ultra violet (UV) or other indices, trip or travel planning, traffic conditions, airport delays, school closings or delays, daily forecast, hourly forecast, narrative forecast, seasonal outlooks, weather warnings and watches, satellite imagery, radar imagery, forecast weather shields, forecast precipitation, recommendations, and lifestyle alerts, such as warnings to gardeners about frost conditions, conditions on the skies for pilots, or road conditions for drivers. The weather information can be targeted to the person. Thus, when two different people request a local forecast from the weather targeting system 10, the person that has previously requested pollen count information can be delivered the pollen count along with the local forecast whereas a person who has previously requested the heat index can be delivered the heat index along with the local forecast. The weather targeting system 10 can also selectively deliver information based on the product or co-brand relationship. For the product, as discussed above, the weather targeting system 10 may deliver text only to certain products and graphic intensive weather information to other products. Furthermore, the weather targeting system 10 can selectively deliver weather information based on the presence or absence of a co-brand relationship or other type of partnership.

## 2. ADVERTISING

In addition to weather information, the weather targeting system 10 preferably delivers targeted advertising. The advertising is preferably targeted based on the person,

such as the person's interests. These interests may be implied from the information requested by the person such as from their clickstream, derived from input provided by the person, such as through a questionnaire or registration process, and may be obtained from a third party. Consequently, the weather targeting system 10 preferably delivers ski advertisements to those visitors that have an interest in skiing and delivers golf advertisements to those that have an interest in golfing.

In addition to targeting advertisements to the person, the weather targeting system 10 also preferably delivers advertisements that are targeted to the location. As discussed above, the weather targeting system 10 establishes regions of different geographic specificity. In the United States, for instance, the weather targeting system 10 defines a hierarchy of country, state, direct marketing area, city, and zip code. As a result, the weather targeting system 10 can deliver one group of advertisements which are tagged on a national basis, a second group of advertisements which are tagged on a state by state basis, a third group of advertisements which are tagged to the direct marketing area, a fourth group of advertisements tagged to the city, and a fifth group of advertisements tagged to the zip code. In a manner that will be described in more detail below, the weather targeting system 10 preferably selects advertisements so that they are targeted to a more specific geographic region and selects the advertisements to optimize revenue to the weather targeting system 10.

In addition to location, the weather targeting system 10 delivers advertisements that are targeted based on the weather. As explained above, the weather targeting system 10 encodes the weather conditions for each of the geographic regions, such as each city. The advertisements or other information are then tagged according to the weather codes. If it is snowing in Denver, the weather targeting system 10 looks for advertisements that are tagged

for snowy weather conditions. If, on the other hand, the weather in Denver is raining, then the weather targeting system 10 looks for advertisements tagged for rainy conditions, such as rain gear.

The advertisements may also be targeted based on the product platform. As with weather information, some advertisements may be more graphic-intensive or data-intensive than other types of advertisements. As a result, advertisements that are sent to PDAs may be text only, whereas advertisements that are sent to TV products can be highly animated. The weather targeting system 10 therefore selects advertisements based on the product platform.

The weather targeting system 10 also preferably selects advertisements based on the existence of a partner arrangement, such as a co-brand relationship. Depending upon the relationship with the partner, the weather targeting system 10 may be able to deliver only certain advertisements or may be prohibited from delivering other advertisements. For instance, when delivering weather information to the partner for delivery to the requester, the weather targeting system 10 would not insert advertisements to a competitor of that partner.

The weather targeting system 10 therefore targets advertisements based on the partner relationship, if one exists.

One difficulty the weather targeting system 10 has in delivering information is that the weather targeting system 10 experiences large fluctuations in traffic. During a typical day, the weather targeting system 10 may experience a traffic pattern such as that shown in Figure 14. The traffic may have one or two spikes followed by a large drop off. The traffic at the weather targeting system 10, however, may differ greatly from day to day. Since the traffic is largely dependent upon ambient weather conditions, which can change drastically, the traffic at the weather targeting system 10 can change drastically when the weather

changes. These changes may be seasonal, such as during hurricane season, or in the middle of winter, or may be more isolated to discrete events, such as a volcanic eruption. The weather targeting system 10 can therefore experience traffic conditions just as unpredictable as the weather conditions.

5 Advertising campaigns typically prescribe how many advertisements should be shown over a certain period of time and may additionally indicate the frequency at which the advertisements should be shown. More complicated advertising campaigns may have a series of advertisements that should be shown in succession to the general public or in succession to individual consumers. For instance, the weather targeting system 10 may deliver a first advertisement to a consumer three times, a second advertisement three times, and so on until all advertisements in this series have been delivered to the consumer. For an individual advertisement or advertising campaign, the weather targeting system 10 should display the advertisement at a rate so that the desired number of advertisements are shown over the entire campaign period. For instance, an advertisement that should be shown one  
15 thousand times over a one month period should not be shown 500 times in the first day. In addition to monitoring individual advertising campaigns, the weather targeting system 10 must also coordinate a multitude of advertising campaigns while at the same time trying to maximize the amount of revenue generated from delivering such advertisements.

A system 150 for delivering targeted advertising will now be described with reference  
20 to Figure 15. The system 150 includes the web server 50 for receiving requests for information, such as through the Internet 12 from a consumer. These requests are forwarded from the web server 50 to the profiler 56. The profiler 56 determines the type of information that should be delivered in response to the request, such as based on the consumer, location,



weather, product, and co-brand relationship. The profiler 56 can therefore execute the method 120 shown in Figure 13. The profiler 56 has access to a database 58 which stores information on the consumers. The profiler 56 requests information from the back-end weather system 30. An advertising engine 152 is in communication with the back-end weather system 30 as well as with the profiler 56 and determines which advertisements should be delivered in response to the request. The selected information is then delivered to the profiler 56 and then to the web server 50, which delivers the information to the consumer through the Internet 12.

The advertising engine 152 comprises an ad server, preferably the Open AdStream (OAS) server from Real Media, Inc. of New York, New York. The Open AdStream has a web-based user interface to the advertising engine 152 and has delivery engines on each of the servers within the back-end weather system 30, such as content servers 36, image servers 37, fCGI servers 38, and CGI servers 39. The advertising engine 152 periodically polls the delivery engines dispersed within the back-end weather system 30 to determine the number and types of advertisements that each of the servers has delivered. The advertising engine 152 uses this information to control which advertisements are delivered and the rate at which they are delivered. The advertising engine 152 also preferably monitors the traffic at the weather targeting system 10 and uses this knowledge in controlling the delivery engines. In the preferred embodiment, the spoofed URL, which defines the advertisement to be served, is hierarchical in nature. The advertising engine 152 serves up the advertisement based on the first match established between the spoofed URL and an advertisement. The hierarchy has three dimensions of weather conditions, product/profile, and geography.

### 3. RECOMMENDATIONS

In addition to weather information and advertising, the weather targeting system 10 may also deliver recommendations. A system 160 including a recommendations engine 162 will now be described with reference to Figure 16. Requests for information are received at the web server 50 which then forwards these requests to the profiler 56 having the database 58. The profiler 56, as discussed above, may execute the method 120 for targeting information based on any one of the person, location, weather, product, or partner relationship. The request for information is also sent to the recommendations engine 162. Based on such data as the person making the request, the information requested, the location, the weather, the product, or even the existence of a co-brand relationship, the recommendations engine 162 provides advice to the consumer. Even when the recommendations engine 162 does not receive a request, the recommendations engine can provide advice to the consumers.

The recommendations engine 162 can provide advice that is targeted to the person. For instance, the recommendations engine 162 offers advice to gardeners on how much shade or sun a particular plant may need. The recommendations engine 162 can also deliver advice that is targeted to the location. For instance, the recommendations engine 162 can provide advice to those living in Florida on how to react to the approach of a hurricane. The recommendations engine 162 can also deliver advice based on the weather. For example, the recommendations engine 162 may advise people within a geographic region of a frost warning and suggest that they cover plants that may be damaged by frost. As will be appreciated to those skilled in the art, the recommendations engine 162 can offer advice targeted to a person based on the weather. Thus, the weather targeting system 10 can provide

frost warnings only to those persons associated with an interest in gardening. The recommendations engine 162 can also offer advice that is targeted to the product. For instance, the recommendations engine 162 may deliver a text-only warning about frost to PDAs 16 but deliver more extensive information about a frost warning, such as the types of plants vulnerable to frost, to TV products 15. The recommendations engine 162 provides the consumer with advice based on weather factors for a given geography/location as compared to other different weather factors at the same or different location. For instance, when the recommendations engine 162 has data of Boston, raining, windspeed 55 mph, temperature 12 C, the recommendations engine 162 would deliver a warning to not go outside. As another example, if the recommendations engine 162 had the data of Pebble Beach, humidity 46%, wind 5 mph, temperature 83 F, the recommendations engine 162 would issue an advisory of a perfect golf day and may even suggest that the consumer use heavy clubs.

#### 4. COMMANDS

The information that is delivered by the weather targeting system 10 may also take the form of a command. The recommendations engine 162 may therefore not only deliver advice but also deliver commands. These commands are forwarded by the web server 50 to the consumers and, more specifically, to devices or systems. For example, the recommendations engine 162 can inform some consumers about a frost warning and advise them to cover plants vulnerable to the frost conditions. The recommendations engine 162 may additionally issue commands for turning up the thermostat in consumers' homes. These commands can be transmitted through any suitable network 12, including the Internet. The commands may be used to control any type of device or system including, but not limited to,

computers, HVAC systems, irrigation systems, window treatments, lights, motorized windows and doors, motorized tarps or ground covers, heaters, and clocks.

For example, the commands may be transmitted as control signals through the Internet to a local controller, such as an in-house PC. The PC or other such controller has  
5 suitable interfaces to various devices which allow the PC to control the devices. Additional controllers may be associated with certain devices in order to assist in the desired operation, such as a motor and drive circuit for controlling movement of items. The PC translates the control signals received from the system 10 into suitable commands for the devices. The PC can transmit the commands through wiring, such as a house's electrical wiring, or wirelessly.

As another example, the control signals could be transmitted wirelessly to and from a GPS device. The device could be an in-car navigation system, such as On Star or NavTech. In the event of inclement weather or possibly traffic conditions, the control signals are sent to the GPS device. These control signals preferably would cause the device to alert the driver of the inclement weather or traffic conditions. The control signals may additionally include a  
15 recommendation, such as a recommended change of directions or an alternate route. In a similar manner, control signals can be transmitted wirelessly to a thermostat in response to extreme temperatures, to sprinkler systems in response to precipitation, and to security systems with severe weather alerts. By sending control signals to security systems, the home security system can issue alerts when a tornado warning exists in the resident's area. The  
20 transmission network may comprise any suitable network, such as but not limited to the Internet, satellite feed, cable network, or wireless communications path. The commands are preferably generated and transmitted through XML.

### III. CUSTOMIZATION

As discussed above, the weather targeting system 10 can deliver information that is personalized to the consumer. This personalization may occur by having the consumer register or complete an on-line questionnaire or may occur by intrinsic methods, such as detecting the consumer's clickstreams, and the type of information most frequently requested. In addition to personalization, the weather targeting system 10 preferably also supports customization. With customization, the consumers can inform the weather targeting system 10 about the type of information, presentation of information, the delivery of information, or even whether advice or commands should be transmitted. With regard to type of information, the consumers can indicate the type of weather information they are interested in seeing and input their interests as to the type of other information they want to receive. With regard to how the information should be delivered, the consumer is preferably able to specify the network and the type of product to receive the information. For instance, the visitor can indicate that local forecasts should be delivered to a personal computer 17 but that weather warnings be automatically routed to a pager or other wireless device. Through customization, the consumers can also specify what devices or systems can receive commands and how and under what circumstances they are transmitted.

One example of how the weather targeting system 10 may deliver customized information will now be described with reference to Figures 17(A) to 17(C). Figure 17(A) illustrates a template that is completed by the consumer in order to customize the delivery of information. As shown in this example, the consumer can request weather news, local current conditions for a city or zip code, forecast for additional cities, and choose different maps to be displayed. For example, a first consumer may select the local forecast for

Kennesaw, Georgia, the additional forecast in Lakeland, Florida and Columbus, Georgia, and Cleveland, Ohio. Additionally, this first consumer may ask to see the maps for current U.S. temperatures, southeast U.S. current weather, southeast U.S. Doppler radar, and southeast U.S. satellite. In response to such a customization, when the consumer requests information from the weather targeting system 10, this consumer would receive the information identified during the customization, such as the information shown in Figure 17(B). In contrast, a second consumer to the weather targeting system 10 may ask for the forecast and current conditions in Norcross, Georgia, the additional city forecasts in Paducah, Kentucky and Jensen Beach, Florida and ask for maps of current U.S. temperatures, southeast U.S. current weather, southeast U.S. Doppler radar, U.S. infrared satellite, Hawaii satellite, and travel weather-rain. The results of such a customization for the second consumer would result in the delivery of information such as that shown in Figure 17(C).

A method 180 by which the weather targeting system 10 delivers customized information will now be described with reference to Figure 18. At 182, the weather targeting system 10 receives a request for information. For instance, the consumer may enter the URL for the weather targeting system 10 or click on a link to receive the customized information. At 184, the weather targeting system 10 determines the identity of the requester. According to the preferred embodiment of the invention, the weather targeting system 10 uses cookies to identify the requester, although in other embodiments of the invention the weather targeting system 10 can identify the requester in other ways. At 186, the weather targeting system 10 retrieves the template for the requester. The template indicates the type of information desired and could also indicate how the information should be presented and

delivered. At 188, the weather targeting system 10 retrieves the information referenced by the template and then delivers this information at 189.

### III. MODULAR CONTENT

5 A weather targeting system 190 according to a second embodiment of the invention will now be described with reference to Figure 19. As with the weather targeting system 10, the weather targeting system 190 receives weather information from data feeds 8. The data feeds 8 are not limited to weather information and may be derived from any suitable source, such as the sources discussed above with reference to the weather targeting system 10. The weather targeting system 190 includes a parser 192 for receiving the data and for storing the data within database 194. Weather information and/or other types of information are selectively gathered by a rules engine 196 and are then assembled by an integration engine 198. The integration engine 198 then forwards the information through networks 12 to a plurality of different products, such as a mobile radio telephone 13, wireless lap-top  
15 computer 14, PDA 16, TV products 15, or desk-top computers 17. As with the weather targeting system 10, the weather targeting system 190 is not limited in the types of networks 12 or the type or brand of product.

The weather targeting system 190 advantageously creates a single database 194 which stores the weather information and other information used by all of the products. Thus, the  
20 information delivered to a PDA 16 is obtained from the database 194 as is the information that is delivered to TV products 15. In contrast, many systems previously created one database of information that is suitable for delivery to one particular type of product, such as the PDA 16. These systems have a second separate database of information that is suitable

for delivery to other products, such as desk-top computers 17. When another type of product is introduced into the market, these conventional systems create yet another database which stores information in a format compatible for the new product. The weather targeting system 190 eliminates the need for these multiple databases and consequently greatly simplifies the manner in which information can be delivered to multiple products.

In the preferred embodiment, the parser 192 receives information from data feeds 8 and parses the data into XML. The parser 192 receives the data feeds 8, tags the information, and stores the tagged information in the XML database 194. The parser 192 performs a translation function parsing the data from data feeds 8 into a common document model tree. In the tree, which is preferably based on XML or successors to it, the data and their attributes are mapped into nodes which fit the common document model for storage in the database 194. The parser 192 accepts a wide variety of data types or formats and puts the data in a form and format that can be used by the common document or data model. The parser 192 uses rules in determining how exactly the data should be formatted and what attributes the data should take. These rules are preferably written using a uniform rules definition language (URDL). The parser 192 may comprise a plurality of parsing engines with each engine associated with one of the data feeds 8 or associated with a type or format of data feed 8. The parser defines which template to provide based on either extension or language as defined by the URL. The deliverable is device dependent but language independent. The template defines what elements to include so that a Palm template will only load Palm elements, a pager element will only load pager elements, etc.

The rules engine 196 executes business rules to determine which information in the database 194 should be selected and delivered to the integration engine 198. The rules



engine 196 preferably targets the information to one or more of the person, location, weather, product, or partner relationship. The rules engine 196, for instance, may execute the method 120 shown in Figure 13. The rules engine 196 may also include the advertising engine 152 and the recommendations engine 162. Preferably, the system 10 includes the rules engine 196 that defines the content relationship to be delivered as well as the advertising engine 152 to define which advertisements to be delivered.

The integration engine 198 assembles the information gathered by the rules engine 196 from the database 194 and formulates a presentation for the designated product. As with the parser 192, the integration engine 198 preferably comprises a plurality of integration engines with each engine 198 associated with a type of product. Thus, one integration engine 198 is associated with mobile radiotelephones 13, another integration engine 198 is associated with lap-top computers 14, a third integration engine 198 is associated with PDAs 16, one or more additional integration engines 198 are associated with TV products 15, and yet another integration engine 198 is associated with desk-top computers 17. The integration engine 198 controls both the presentation of the information as well as the delivery of the information. Consequently, the integration engines 198 may also be associated with different networks, such as one engine 198 for the Internet and another engine 198 for cellular networks. The integration engine 198 actually creates the URL string that will be sent to the browser respective of device type.

The invention has generally been described with reference to a consumer requesting information. As a common example, the consumer requests information from a web site associated with the weather targeting system and, in response to this request, the weather targeting system delivers the information to the consumer. The request may therefore

involve the consumer entering a domain name or clicking on a link. A request can also be generated when the consumer interacts with the product, such as when the consumer enters information on the PDA 16 to cause the PDA 16 to request weather information. The interaction sufficient to initiate the request may be as simple as the consumer providing power to the product or establishing communications with the product through the network.

Furthermore, the weather targeting system may make the information available to the consumer before the consumer actually makes the request. For example, the weather targeting system may deliver information to a consumer through one of the TV products. This information may be broadcast to the consumer or downloaded to the consumer's product. As a result, when the consumer then later desires to have the information, the consumer can cause the product to change channel to receive the broadcast or the consumer can cause the information to be retrieved by the product. Additionally, the request may be automatically generated by the product without requiring any consumer action. Other types of requests for information are encompassed by the invention.

In the preferred embodiments, the request is sent through the Internet and the weather targeting system delivers the information through the Internet. Thus, the request and the information are transmitted through the same network. It should be understood that the request and the information may be delivered through different networks. For example, the request may be delivered through the Internet to the weather targeting system but then the weather targeting system fulfills the request by delivering the information through a cable network. Additionally, the information that is transmitted to the consumer may be carried by more than one network. For instance, the weather targeting system can deliver some information through a paging network to the consumer's pager, some other information

through a cellular network to the consumer's PDA, and commands through the Internet to the consumer's home thermostat.

The foregoing description of the preferred embodiments of the invention has been presented only for the purpose of illustration and description and is not intended to be

5 exhaustive or to limit the invention to the precise forms disclosed. Many modifications and variations are possible in light of the above teaching.

The embodiments were chosen and described in order to explain the principles of the invention and their practical application so as to enable others skilled in the art to utilize the invention and various embodiments and with various modifications as are suited to the particular use contemplated.